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EXAMINER	
GE, YUZHEN	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,277	FERMAN, A. MUFIT	
	Examiner	Art Unit	
	YUZHEN GE	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-15,17-21 and 23* is/are rejected.

7)☒ Claim(s) *6, 16, 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Jan. 25, 2008 has been entered.

Examiner's Remark

Applicant's argument and 37 CFR 1.131 declaration, filed on Feb. 16, 2007, has been received and entered into the file. Regarding the claim objection to claim 13, the claim recites two statistical measures, one being a pixel value and one being the standard deviation of a pixel. The comparison of the score of a football game with the intensity of a pixel is not a good one since the score is the sum of many runs while the intensity of a pixel value can be measured at one time. The examiner does not agree that a pixel value of a color channel or an intensity value of a pixel is considered a statistical measure while the examiner does not have any problem with the standard deviation, average or mean being a statistical measure. Furthermore a "statistic" is not the term that is objected to. It is the term "statistical measure" that the examiner objects to when it refers to the intensity value of a pixel. Since it is not clear what "the value of the pixel" in claim 13 refers to, a new 112 2nd paragraph rejection of claim 13 is added. Based on applicant's argument, the examiner will use the same interpretation for the term "statistical measure" by the applicant, which can mean the intensity or a value of a pixel.

The 37 CFR 1.131 filed on Jan. 25, 2008 under 37 CFR 1.131 has been considered but is ineffective to overcome the Jarman's reference.

The evidence submitted is insufficient to establish a reduction to practice of the invention in this country or a NAFTA or WTO member country prior to the effective date of the publication data of Jarman's reference. Pages 1 and 2 of the "Invention Disclosure Form" submitted with the 1.131 are dated Feb. 7, 2003. However, Pages 3-10 of the "Invention Disclosure Form" which discloses the actual reduction to practice are shown with date Sept. 22, 2003, which is after the effective date of Jarman's reference. Therefore Jarman's reference is not removed in view of applicant's declaration filed under 37 CFR 1.131.

Claims 12, 14 and 18-20 are rejected by a new ground of rejection based on a new prior art by Jarman et al (US Patent Pub. 2004/0240747).

DETAILED ACTION

Claim Objections

2. Claim 13 is objected to because of the following informalities: it recites the first statistical measure is the value of said pixel. A pixel value is normally not regarded as a statistical measure. Appropriate correction is required. For examination purposes, the examiner will interpret the term "statistical measure" as argued by the applicant, that is, it can mean the intensity of a pixel or a pixel value.

Claim Rejections - 35 USC § 112

3. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 recites the limitation "the value of said pixel" in "said first channel". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5, 7-15, 17, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Jarman et al (US Patent Pub. 2004/0184670).

Regarding claims 1, 7, and 23, Jarman et al teach a method to identify sub-regions of a multi-channel image as containing red-eye comprising:

converting and providing said multi-channel image to a modified multi-channel image wherein at least one of said channels is an enhanced luminance channel that has more than 60% of the luminance information of said multi-channel image and at least one of said channel is a saturation channel (paragraphs [0003], [0148], the lightness channel contains 100% luminance and therefore contains greater than 60% of the luminance information); and

identifying a sub-region of said image as containing a red-eye region based upon, at least in part, processing said saturation channel by applying a saturation mask to one or more pixels of said image, said saturation mask comparing the standard deviation of the saturation value of a respective pixel to a threshold (paragraphs [0083]-[0084], [0296]-[0297], [0319], [0322] and [0323]);

Regarding claim 2, Jarman et al teach the method of claim 1 wherein said standard deviation of said saturation value of a respective pixel is measured relative to the mean saturation of pixels in a neighborhood local to said respective pixel (paragraphs [0083], [0296], [0319], [0328], also inherent from definition of standard deviation).

Regarding claims 3 and 8, Jarman et al teach the method of claim 1 and claim 7 wherein said modified multi-channel image has hue, saturation, and intensity channels (paragraphs [0003], [0148]).

Regarding claims 4 and 9, Jarman et al teach the method of claim 3 and 8 wherein said saturation channel represents the relative bandwidth of the visible output from a light source (paragraphs [0003], [0148], inherent from the definition of saturation).

Regarding claims 5 and 10, Jarman et al teach the method of claim 4 and claim 7 wherein said hue is substantially the wavelength within the visible-light spectrum at which the energy output from a source is the greatest (paragraphs [0003], [0148], inherent from the definition of hue).

Regarding claim 11, Jarman et al teach the method of claim 7 wherein each channel of said multi-channel image is processed differently to identify said sub-region of said image (paragraphs [0021]-[0025], [0044]-[0048], [0309], [0313], Figs. 3-7, and Figs. 9-11, the thresholds and numbers are different for different channels).

Regarding claim 12, Jarman et al teach a method to identify sub-regions of a multi-channel image containing red-eye, said multi-channel image having at least a first channel and a second channel, said method comprising:

(a) identifying a sub-region of said image as containing a red-eye region based upon, at least in part, applying a first mask to said first channel, said first mask comparing a first statistical measure of at least one pixel of said image to a first threshold (paragraphs [0083]-[0084], [0296]-[0297], [0319], [0322] -[0323] and [0328]); and

(b) applying a second mask to said second channel, said second mask comparing a second statistical measure of at least one pixel of said image to a second threshold, said second statistical measure being a different statistical property than said first statistical measure (paragraphs [0083]-[0084], [0296]-[0297], [0319], [0322], [0323] and [0328]).

Regarding claim 13 (interpreted), Jarman et al teach the method of claim 12 where said first statistical measure is the value of said pixel in said first channel and said second statistical measure is the standard deviation of said pixel in said second channel (paragraphs [0021]-[0026], [0031], [0161]-[0164], [0183], [0233]-[0246], [0262], [0309], [0313], [0083]-[0084], [0296]-[0297], [0319], [0322], [0323] and [0328]).

Regarding claim 14, Jarman et al teach the method of claim 12 wherein said first threshold is different than said second threshold (paragraphs [0021]-[0026], [0031], [0184], [0209]-[0218], [0218], [0233]-[0246], [0262], [0309], [0313], [0322]-[0323], [0328], [0338]).

Regarding claim 15, Jarman et al teach the method of claim 13 wherein said standard deviation of said saturation value of a respective pixel is measured relative to the mean saturation of pixels in a neighborhood local to said respective pixel (paragraphs [0083], [0296], [0319], [0328], also inherent from definition of standard deviation).

Regarding claim 17, Jarman et al teach the method of claim 13 wherein said second channel represents saturation (paragraphs [0021]-[0026], [0031], [0184], [0209]-[0218], [0218], [0233]-[0246], [0262], [0309], [0313], [0322]-[0323], [0328], [0338]).

6. Claim 12 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Jarman et al (US Patent Pub. 2004/0240747).

Regarding claim 12, Jarman et al teach a method to identify sub-regions of a multi-channel image containing red-eye, said multi-channel image having at least a first channel and a second channel, said method comprising:

(a) identifying a sub-region of said image as containing a red-eye region based upon, at least in part, applying a first mask to said first channel, said first mask comparing a first statistical measure of at least one pixel of said image to a first threshold (Fig. 21, paragraphs [0095]-[0099], [0104], Figs. 6 and 11-14, the lightness, which is a statistical measure as interpreted by the applicant, is compared with a threshold); and

(b) applying a second mask to said second channel, said second mask comparing a second statistical measure of at least one pixel of said image to a second threshold, said second statistical measure being a different statistical property than said first statistical measure

(paragraphs [0095]-[0099], [0104], Figs. 6 and 11-14, the saturation which is a statistical measure as interpreted by the applicant, is compared with another threshold).

Regarding claim 14, Jarman et al teach the method of claim 12 wherein said first threshold is different than said second threshold (paragraphs [0095]-[0099], [0104], Figs. 6 and 11-14, the threshold for the lightness and saturation are different).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarman et al (US Patent Pub. 2004/0184670) in view of Liang et al (US Patent 6,678,413 B1). Regarding claim 18, Jarman et al teach the method of claim 12. However they do not teach the method comprising using a convex hull technique to identify contiguous regions. Liang et al teach a method comprising using a convex hull technique to identify contiguous regions when segmenting and identifying an object (col. 17, line 53-col. 18, line 6). Convex hull techniques are known to work and therefore they can be used to segment regions as shown in Figs. 14-22 by Jarman et al (In re KSR v. Teleflex Inc). It is desirable to represent and characterize an object by known techniques. Therefore it would have been obvious to one of ordinary skill in the art, at

the time of invention, to use the convex hull method of Liang et al to represent and identify contiguous regions in the method of Jarman et al.

Regarding claim 20, Jarman et al teach a method to identify sub-regions of a multi-channel image containing red-eye, said method comprising:

(a) providing said multi-channel image comprising luminance, hue, and saturation channels, respectively wherein at least one of said channels substantially includes the hue of said image (paragraphs [0003], [0148]); and

(b) identifying a sub-region of said image as containing a red-eye region based upon, at least in part:

(i) filtering out selective pixels of said image based upon a first mask applied to said luminance channel, said mask comparing the luminance value of respective pixels in said image to a first threshold (paragraphs [0021]-[0026], [0031], [0161]-[0164], [0183], [0233]-[0246], [0262], [0309], [0313], [0083]-[0084], [0296]-[0297], [0319], [0322], [0323] and [0328]);

(iii) thereafter applying a second mask to said hue channel, said second mask comparing the hue value of respective pixels in said plurality of contiguous regions to a second threshold (paragraphs [0021]-[0026], [0031], [0161]-[0164], [0183], [0233]-[0246], [0262], [0309], [0313], [0083]-[0084], [0296]-[0297], [0319], [0322], [0323] and [0328]);

(iv) subdividing said plurality of contiguous regions into a plurality of contiguous sub-regions based upon said second mask and a connected component technique (Figs. 14-22

and 26-33, paragraphs [0067]-[0070], [0159]-[0160], the techniques of finding edges and smoothing edges are considered connected component technique); and

(v) filtering out the pixels in selective sub-regions based upon a comparison of the aspect ratio of respective said sub-regions to a third threshold (paragraphs [0251], [0253]-[0256]).

However they do not explicitly teach (ii) thereafter applying a convex hull technique to group remaining pixels of said image into a plurality of contiguous regions. . Liang et al teach a method comprising using a convex hull technique to identify contiguous regions when segmenting and identifying an object and to group pixels of an image into a plurality of contiguous regions (col. 17, line 53-col. 18, line 6). Convex hull techniques are known to work and therefore they can be used to segment regions as shown in Figs. 14-22 by Jarman et al (In re KSR v. Teleflex Inc). It is desirable to represent and characterize an object by known techniques. Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention, to use the convex hull method of Liang et al to represent and identify contiguous regions in the method of Jarman et al.

Regarding claim 21, Jarman et al teach the method of claim 20 including the step of applying a third mask to said saturation channel said third mask comparing the standard deviation of the saturation value of respective pixels in said plurality of contiguous subregions to a fourth threshold (paragraphs [0021]-[0026], [0031], [0184], [0209]-[0218], [0218], [0233]-[0246], [0262], [0309], [0313], [0322]-[0323], [0328], [0338]).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jarman et al (US Patent Pub. 2004/0184670) in view of Liang et al, further in view of Luo et al (US Patent 7,035,461).

Regarding claim 19, Jarman et al and Liang et al teach the method of claim 18. However they do not explicitly teach wherein contiguous regions having a size less than a threshold are removed as potential red-eye regions, said threshold computed dynamically based on the size of the input image. In the same field of endeavor, Luo et al teach resizing the input image (Fig. 12, col. 14, line 55-col. 15, line 11, col. 16, lines 46-59) and comparing the contiguous regions of the resized image with a threshold and removing the regions having a size less than a threshold (col. 16, lines 7-14, Figs. 12-13). Depending on the size of the input image, the size of the red-eye is different also. Scaling the input image dynamically based on the size of the input image and then comparing the size of the contiguous regions with a threshold is equivalent to comparing the non-scaled contiguous region with a threshold that is dynamically computed based on the size of the input image. It is desirable to be efficient and correct when detecting red-eye pixels by eliminating pixels that are impossible to be red eyes. Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention, to use the method of Luo et al in the method of Jarman and Liang et al so that contiguous pixels are eliminated/removed as non red-eye pixels depending on the size of input image.

10. Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarman et al (US Patent Pub. 2004/0240747) in view of Liang et al (US Patent 6,678,413 B1).

Regarding claim 18, Jarman et al teach the method of claim 12. However they do not teach the method comprising using a convex hull technique to identify contiguous regions. Liang et al teach a method comprising using a convex hull technique to identify contiguous regions when segmenting and identifying an object (col. 17, line 53-col. 18, line 6). Convex hull techniques are known to work and therefore they can be used to segment regions as shown in Figs. 14-22 by Jarman et al (In re KSR v. Teleflex Inc). It is desirable to represent and characterize an object by known techniques. Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention, to use the convex hull method of Liang et al to represent and identify contiguous regions in the method of Jarman et al.

Regarding claim 20, Jarman et al teach a method to identify sub-regions of a multi-channel image containing red-eye, said method comprising:

(a) providing said multi-channel image comprising luminance, hue, and saturation channels, respectively wherein at least one of said channels substantially includes the hue of said image (paragraphs [0003], [0091]); and

(b) identifying a sub-region of said image as containing a red-eye region based upon, at least in part:

(i) filtering out selective pixels of said image based upon a first mask applied to said luminance channel, said mask comparing the luminance value of respective pixels in said image to a first threshold (paragraphs [0095]-[0098], [0104] and [0117], Fig. 6);

(iii) thereafter applying a second mask to said hue channel, said second mask comparing the hue value of respective pixels in said plurality of contiguous regions to a second threshold (paragraphs [0095]-[0098] and [0104], Fig. 6);

(iv) subdividing said plurality of contiguous regions into a plurality of contiguous sub-regions based upon said second mask and a connected component technique ([0095]-[0098], [0104], [0144], [0148], [0153]-[0157], Figs. 6, 10-19, , the techniques of finding edges and the technique applied to obtain Figs. 13, 15 and 18-19 are considered connected component technique); and

(v) filtering out the pixels in selective sub-regions based upon a comparison of the aspect ratio of respective said sub-regions to a third threshold (paragraphs [0131], [0134]-[0136]);

However they do not explicitly teach (ii) thereafter applying a convex hull technique to group remaining pixels of said image into a plurality of contiguous regions. . Liang et al teach a method comprising using a convex hull technique to identify contiguous regions when segmenting and identifying an object and to group pixels of an image into a plurality of contiguous regions (col. 17, line 53-col. 18, line 6). Convex hull techniques are known to work and therefore they can be used to segment regions as shown in Figs. 14-22 by Jarman et al (In re KSR v. Teleflex Inc). It is desirable to represent and characterize an object by known techniques. Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention, to use the convex hull method of Liang et al to represent and identify contiguous regions in the method of Jarman et al.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jarman et al (US Patent Pub. 2004/0240747) in view of Liang et al, further in view of Luo et al (US Patent 7,035,461).

Regarding claim 19, Jarman et al and Liang et al teach the method of claim 18. However they do not explicitly teach wherein contiguous regions having a size less than a threshold are removed as potential red-eye regions, said threshold computed dynamically based on the size of the input image. In the same field of endeavor, Luo et al teach resizing the input image (Fig. 12, col. 14, line 55-col. 15, line 11, col. 16, lines 46-59) and comparing the contiguous regions of the resized image with a threshold and removing the regions having a size less than a threshold (col. 16, lines 7-14, Figs. 12-13). Depending on the size of the input image, the size of the red-eye is different also. Scaling the input image dynamically based on the size of the input image and then comparing the size of the contiguous regions with a threshold is equivalent to comparing the non-scaled contiguous region with a threshold that is dynamically computed based on the size of the input image. It is desirable to be efficient and correct when detecting red-eye pixels by eliminating pixels that are impossible to be red eyes. Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention, to use the method of Luo et al in the method of Jarman and Liang et al so that contiguous pixels are eliminated/removed as non red-eye pixels depending on the size of input image.

Allowable Subject Matter

12. Claims 6, 16, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims. A statement of reasons for the indication of allowable subject matter is presented in the previous office action dated Oct. 23, 2007 and will not be repeated here.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuzhen Ge whose telephone number is 571-272 7636. The examiner can normally be reached on 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bhavesh M Mehta/
Supervisory Patent Examiner, Art Unit 2624

Yuzhen Ge
Examiner
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